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EXAMINER

COOLEY, CHARLES E

ART UNIT	PAPER NUMBER
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1723

DATE MAILED: 08/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/673,233

Applicant(s)

MOSS, REINHARD

Examiner

Charles E. Cooley

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 20 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-15 is/are allowed.
- 6) ☒ Claim(s) 1,3-11 and 16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 July 1953 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 4.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **FINAL OFFICE ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Drawings***

2. The replacement sheet filed on 20 JUL 2005 is approved.

### ***Specification***

3. The substitute specification filed 20 JUL 2005 is approved and has been entered.
4. The substitute abstract is acceptable.
5. The title of the invention is acceptable.

### ***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

7. The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical

Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

**8. Claims 1, 3-11 and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Yoshida et al. (US 6,475,131).**

The patent to Yoshida et al. discloses a centrifuge having a vertical axis of rotation (when viewing Fig. 3 in portrait mode and note col. 8, lines 11-15 which teaches other types of centrifuges) comprising a nozzle drum 1 having outlet nozzles 7 for discharging a separated phase of the feed material; a feed tube 5 for feeding material to the drum 1; a feed system 20, 21, and pump P (Fig. 3) for feeding particles 12 into the drum 1 in response to some control device (which is inherently considered to be responsive to one or more signals - note the disclosure recites the stopping of feeding and drum drives are switched off and the discharge port is electronically or manually opened (col. 4, lines 10-37) and the valves in the feeding system are opened and closed (col. 6, lines 20-57 and col. 7, lines 3-25) which must be accomplished by some control device and the patent teaches that separators can be automated to employ the process steps of the invention (col. 8, lines 5-10) which automation of course mandates a control device responsive to one or more signals of the centrifuge apparatus; the particles 12 being of any desired size by at least factors of ten (col. 3, lines 55-65) and thus may be of a size larger than the diameter of the outlet nozzles 7 which would necessarily plug the nozzles); the particles may be formed of many different materials

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(as taught at and col. 7, lines 50-58) such as rubber or plastic (and thus inherently of various specific weights as a function of the material employed for the particles 12) or formed as dried solids (deemed equivalent to the disclosed globules); the feeding system having a container 20 (prestressed via pressure from the pump in fluid communication with the container 20 as seen in Fig. 3) for receiving the particles 12 which may be disposed in a carrier liquid (Fig. 3 and col. 6, lines 20-30); and a feed tube valve 23.

More particularly and in further detail, the patent to Yoshida et al. discloses a method and apparatus for removing sediment from the inner wall of the rotary drum of a horizontal drum-type centrifugal separator having first and second ends terminating in trunnions supported by bearings, the method comprising: charging a plurality of solid cleaning medium pieces into the rotary drum, supplying a cleaning liquid to the rotary drum, rotating the rotary drum, and to remove sediment from the inner wall thereof, discharging the sediment together with the cleaning liquid. The solid cleaning medium may be charged into the rotary drum either before centrifugal separation or after the centrifugal separation, at the time the drum is cleaned, and may be added either together with the cleaning liquid or before the introduction of the cleaning liquid.

These two alternative procedures are defined as follows. The first procedure (hereinafter called Procedure 1) is a cleaning procedure for removing sediment from the inner wall of the rotary drum of a horizontal drum-type centrifugal separator having first and second ends terminating in trunnions supported by bearings, the method comprising charging a plurality of solid cleaning medium pieces into the rotary drum,

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allowing the solid cleaning medium pieces to deposit on the inner surface of the rotary drum, feeding a liquid to be treated, subjecting the liquid to centrifugal separation in batch operation to form a sediment, supplying a cleaning liquid to the rotary drum, rotating the rotary drum at a speed to attain not more than 1 G, to remove sediment from the inner wall thereof, and discharging the sediment together with the cleaning liquid.

The second procedure (hereinafter called Procedure 2) is a cleaning procedure for removing sediment from the inner wall of the rotary drum of a horizontal drum-type centrifugal separator having first and second ends terminating in trunnions supported by bearings, the method comprising: supplying a plurality of solid cleaning medium pieces and a cleaning liquid to the rotary drum while the drum is decelerating or after it has stopped, rotating the rotary drum at a speed to attain not more than 1 G to remove sediment from the inner wall thereof and discharging the sediment together with the solid cleaning medium pieces and the cleaning liquid.

The cleaning method according to the invention provides for cleaning the rotary drum of a horizontal drum-type centrifugal separator that is supported for rotation at both ends by bearings and is used in separating a slurry of either a singular solution or a mixture of composite solutions containing low concentrations of settleable substances into a solid sediment and sediment-free liquid.

The invention is suitably applicable to the removal of the sediment that has built up on the inner wall of the rotary drum of a horizontal drum-type centrifugal separator designed for separating solids from liquids that contain low concentrations of suspended

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solids. Substrates for treatment using a centrifugal separator include water and aqueous solutions, non-aqueous solutions of organic matter and organic solutions, and composite solutions such as water-oil mixtures, e.g., engine oils and blood. Although the tendency to form deposits on the interior surface of the drum depends on the size of the separator used and on the duration of separating operation, it may generally be said that the lower the concentration of solids in a liquid to be separated the better will be the result. For example, a slurry with a solids content in excess of 1% by weight tends to form a solid deposit rapidly on the interior surface of the rotary drum. This solid deposit will eventually decrease the clarity of the resulting treated liquid. Also, a large amount of solid deposit makes the method of the present invention uneconomical from the viewpoint of operation efficiency.

The cleaning method according to the invention consists of removing a sediment batchwise from the inner wall of a rotary drum. It is characterized by the use, as means for separating or scraping off the sediment from the inner wall of the rotary drum, of a plurality of pieces of solid cleaning medium which are rotated or moved by a water stream within the drum or by rotation of the drum.

The present invention may be practiced by either or both of the following two procedures. 1. A cleaning procedure in which the solid cleaning medium is placed in the rotary drum before feeding into the drum a liquid to be treated. 2. A cleaning procedure in which the solid cleaning medium is introduced into the rotary drum after completion of a separation, during the course of cleaning the drum.

1. A cleaning procedure in which the solid cleaning medium is placed in the rotary drum before feeding into the drum a liquid to be treated. The rotary drum is first charged with solid cleaning medium pieces, comprising from tens to hundreds of pieces. The solid cleaning medium pieces may comprise globules, balls, cubes, rods, or springs, and may range from several millimeters to several centimeters in size. The solid cleaning medium pieces may be composed of rubber, metal, ceramic, plastic or the like having a greater specific gravity than the liquid to be separated. The solid cleaning medium pieces are employed in an amount calculated to be sufficient for settling closely, leaving no space between the pieces, on the inner wall of the drum.

The solid cleaning medium may be introduced into the rotary drum either separately or as mixed with a cleaning liquid in a cleaning liquid tank provided separate from a raw liquid tank. The mixture may be supplied by a pump or head directly into the rotating drum prior to the separating treatment. As the rotary drum is rotated, the solid cleaning medium thus supplied is uniformly distributed on the inner wall of the drum by centrifugal force. The uniformly distributed solid cleaning medium may comprise a single layer; or it may form a plurality of layers, when multiple layers are necessary.

After the solid cleaning medium layer has been formed, a slurry to be separated is continuously fed to the rotary drum. Solid matter is centrifugally sedimented and deposited on the inner surface of the solid cleaning layer. To complete the separating operation, the raw liquid feeding is stopped and the drives of the rotary drum are switched off. As the rotary drum slows down to a speed (X rpm) at which the gravity is slightly greater than the centrifugal force acting on the solid cleaning medium, the



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medium inside the drum begins falling from the upper part of the rotating drum. The sediment on the inner surface of the solid cleaning medium layer comes off also. The falling solid cleaning medium is thrown against the lower part of the rotary drum, whereby the cleaning efficiency is enhanced. In this way the sediment that sticks fast to the inner wall of the rotary drum is easily removed, compared with the ordinary procedure of removal by disassembly that involves much difficulty. Combined use of the cleaning liquid and the solid cleaning medium at speeds below X rpm causes the cleaning medium to generate a high turbulence in the liquid, thus further promoting the cleaning efficiency. To remove the sediment from the rotary drum, the cleaning liquid is supplied to the rotary drum while the drum is rotating at X rpm, and the sediment and the solid cleaning medium are forced out through a discharge port. The discharge port is opened by employing an electronically or manually operated valve, or by manually removing a plug that seals the port. As a further alternative, a separated liquid outlet may be utilized for the discharge purpose. 2. A cleaning procedure in which the solid cleaning medium is introduced into the rotary drum after completion of a separation, during the course of cleaning the drum.

After the conclusion of a centrifugal separation, the feeding of raw liquid and the rotation of the rotary drum 1 are stopped. Next, solid cleaning medium pieces, comprising tens to hundreds of solid cleaning medium pieces are charged into the rotary drum. The solid cleaning medium pieces may be in the form of globules, balls, cubes, or rods, and may range from several millimeters to several centimeters in size. The solid cleaning medium pieces are not limited as to the specific gravity (especially

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the elastic balls known as magic balls) of the pieces, and are supplied to the rotary drum through the raw liquid feed line or via an exclusive feed port. The rotary drum is then driven at a speed not high enough for the elastic balls to stick completely to the inner wall of the rotary drum under the influence of centrifugal force. An ideal speed is the speed  $X$  rpm which produces a centrifugal force of approximately 1 G at which the elastic balls are moved centrifugally to an apex inside the rotary drum and then fall from the apex when the force of gravity exceeds the centrifugal force. Thus the impact of the rolling elastic balls on the solid layer of sediment, and the direct impingement of the elastic balls falling by gravity from an apex inside the rotary drum down onto the solid sediment layer at a lower part of the drum, combine to crush and finely divide the hardened solid sediment layer. At this point in the cleaning process, it is desirable to reverse the direction of the rotation of the centrifugal separator, because, this increases the impacting and crushing action of the solid cleaning medium pieces for the cleaning purpose.

Hard balls composed of steel or ceramic may be used in place of the elastic balls. The shape of the solid cleaning medium pieces may also be varied, said shapes comprising for example, polyhedrons, in addition to globules and balls.

Following the cleaning, the elastic balls are discharged together with the washings from the centrifugal separator.

Procedures 1 and 2 may be used either singly or in combination. The solid cleaning medium is not limited to a single size, shape, or material and may be a combination of different sizes, shapes or materials.

According to Procedure 1, a solid cleaning medium is supplied to a rotary drum prior to a separation procedure so as to form a layer of solid cleaning medium pieces on the interior surface of the rotating drum. Then, a separating treatment is performed. Since sediment is kept out of direct contact with the inner wall of the rotary drum by the layer of solid cleaning medium pieces, it can be easily removed from the drum.

According to Procedure 2, a separation procedure is performed and the resulting sediment on the inner wall of a rotary drum is subsequently subjected to impingement by a solid cleaning medium, whereby it can be easily removed from the drum.

A rotary drum of a horizontal drum-type centrifugal separator preferably embodying the invention is illustrated in FIGS. 1 and 2.

The numeral 1 indicates a rotary drum of a horizontal drum-type centrifugal separator having left and right end walls, with trunnions 2 and 3 supported by bearings 4, which is driven at high speed revolution by a motor (not shown). The right hand trunnion 2 in FIG. 1 has a feed port 5 through which a liquid to be treated is supplied to the rotary drum during a separation operation. In addition either a cleaning liquid or the solid cleaning medium or both may be supplied to the rotary drum through port 5 during a cleaning operation. The left end wall of the rotary drum comprises port 7 for discharging a separated liquid and orifice diaphragm 9 for adjusting the diameter of the discharge port. In addition, the rotary drum 1 is provided with a recovery opening 8 through which solid cleaning medium pieces 12 are removed from the rotary drum and also with a plug 10 which closes the recovery opening 8.

In one embodiment of the invention, the inner walls 11 of the rotary drum 1 are provided with a smooth finish. In a preferred embodiment of Process 1, balls are used as the solid cleaning medium 12 and the inner wall 11 of rotary drum 1 is finished with an even spacing of dents in a size large enough to receive and temporarily hold a part of the ball-shaped solid medium on the inner wall 11 of the rotary drum, and in a number and distribution sufficient to cover the inner wall with an even layer of solid cleaning medium pieces when all of the dents in the surface of inner wall 11 are occupied by solid cleaning medium pieces. The greater capability of the dented inner surface 11 to temporarily hold a ball-shaped solid medium piece is advantageous for the practice of Process 1, since, in that process, it is desirable to distribute the solid cleaning medium 12 substantially evenly and fully on the inner wall 11 of the rotary drum before the introduction of a liquid to be treated. This even distribution of solid cleaning media effectively prevents separated sediment from a subsequent separation operation from collecting directly on the inner wall surface. The aforementioned dents may be formed by grid-forming or any other suitable technique. In one embodiment, when the solid cleaning medium to be used is globular in shape, the dents are formed with the same radius of curvature as that of the solid cleaning medium.

FIG. 3 schematically illustrates an embodiment of the centrifugal separator cleaning system of the invention with which either of the two cleaning procedures according to the present invention may be carried out.

(23) The numeral 1 indicates a rotary drum of a horizontal drum-type centrifugal separator which is the same as or similar to the one described above in conjunction with FIG. 1. When practicing Procedure 2 the inner wall of the rotary drum need not be machined with surface dents in the manner described above.

The rotary drum has a feed port 5 which is connected to a solid cleaning medium tank 20 through a feed pump P and a valve 21. The solid cleaning medium tank 20 is filled with a dispersion of solid cleaning medium 12 in the form of a multiplicity of globules or the like in water or another solvent used as a cleaning liquid. The cleaning liquid mixed with the solid cleaning medium is stirred, when necessary, by an agitator 24 which is driven by a motor M. A liquid to be treated (raw liquid) containing approximately 1% (or preferably less than 1%) solid matter is fed from a raw liquid tank 22. The raw liquid tank 22 can also be equipped with an agitator 25 driven by a motor M.

In practicing Procedure 1, a horizontal drum-type centrifugal separator having a rotary drum 1 as shown in FIGS. 1 and 2 is used. First, the rotary drum is charged with a solid cleaning medium 12 in an amount calculated to be sufficient to form a layer of solid cleaning medium completely covering the inner wall 11. The solid cleaning medium may be directly introduced into the rotary drum before centrifuging. In the embodiment shown, the solid cleaning medium and cleaning liquid are mixed in a solid cleaning medium tank 20, and the mixture is supplied by opening a valve 21 to the inside of the rotary drum 1 by a pump P. The solid cleaning medium 12 so supplied is evenly settled on the inner wall 11 of the rotary drum by the centrifugal force. After the

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layer of solid cleaning medium has been formed, valve 21 is closed and valve 23 is opened to feed into the drum a slurry to be treated from a raw liquid tank 22 continuously to the inside of the rotary drum 1. A sediment component of the slurry is centrifugally settled and deposited on the inner surface of the layer of solid cleaning medium 12, and a clear liquid component of the slurry is separated out and leaves discharge port 7 as a purified liquid. When the separated solid deposit has built up to a predetermined level, feeding of the raw liquid is discontinued and the drives for the rotary drum 1 are stopped.

With the power for rotating the rotary drum 1 switched off, the rotation of the rotary drum slows down. At the point at which the drum's speed has come down to X rpm wherein the force of gravity exceeds slightly the centrifugal force acting on the solid cleaning medium 12, the solid medium begins to fall from an upper part of rotary drum 1, together with the sediment that has deposited on the inner surface of the solid medium layer. The falling solid cleaning medium falls under the influence of gravity to, and impinges on a lower part of the rotary drum, thereby adding to the cleaning efficiency. Combined use of the cleaning liquid with the solid cleaning medium at speeds below X rpm allows the solids to impart a vigorous turbulence to the liquid, further enhancing the cleaning efficiency.

For removal of the sediment from the rotary drum, the liquid from the cleaning liquid tank 20 is supplied to the rotary drum while the drum is rotating at X rpm, so that the sediment and the solid cleaning medium 12 are forced out through a discharge port

7. The remainder of solid cleaning medium 12 that cannot be removed through the port may be discharged by manually detaching a plug 10 which closes discharge port 8.

Procedure 2 involves some modifications in the sequence of operation. Referring to FIG. 3, valve 21 in the line from the outlet of the solid cleaning medium tank 20 is closed and valve 23 in the line from the outlet of the raw liquid tank 22 is open. The raw liquid to be centrifugally separated is fed to the rotary drum 1 of the centrifugal separator by a pump P, and the centrifugal separation is performed.

After the centrifugal separation operation is complete, the rotation of rotary drum 1 is stopped. Valve 21 is opened and valve 23 is closed, and solid cleaning medium pieces (especially the elastic balls known as magic balls) are supplied through feed port 5 to the inside of rotary drum 1. Alternatively, the solid cleaning medium pieces may be introduced into the centrifugal separator while the rotary drum 1 is decelerating. The rotary drum is then rotated at a speed (X rpm) which produces a centrifugal force of approximately 1 G at which the elastic balls are moved centrifugally to an apex inside the rotary drum and then fall from the apex by gravity to a lower elevation point on the interior surface of rotary drum 1. In other words the rotation speed of the rotary drum is such that the centrifugal force generated on the elastic balls of the solid cleaning medium is slightly less than that which would be required to hold the elastic balls against the inner wall of the drum throughout its rotation.

Thus when Procedure 2 is employed, the impact of the rolling elastic balls on the solid sediment layer and the direct impingement of the elastic balls falling by gravity from an apex inside the rotary drum upon the solid sediment layer combine to crush and

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finely divide the hard solid sediment layer. In a subembodiment of Procedure 2, the rotation of the rotary drum of the centrifugal separator is reversed , thus further increasing the force and frequency of impact and crushing action of the solid medium in the cleaning operation.

After the cleaning operation is complete, the elastic balls are discharged from the centrifugal separator together with the cleaning liquid.

In other embodiments of the invention, the composition of the solid cleaning medium may be of harder materials such as, for example, steel or ceramic. In addition the shape of the solid cleaning medium pieces may be varied, including for example shapes such as polyhedrons.

Procedures 1 and 2 may be used either alone or in any combination. The solid cleaning medium is not limited to a single size, shape, or material but may be any combination of different sizes, shapes or compositions thereof.

The present invention makes it possible to remove the accumulated sediment from the inside of a rotary drum more efficiently than heretofore possible by the use of a solid cleaning medium that eliminates the necessity of disassembly of the apparatus for cleaning.

The cleaning procedures of the present invention may be scaled up in size for use in batch-operation type centrifugal separators. Existing centrifugal separators can be easily adapted to use the present invention. in addition existing centrifugal separators capable of automation may be automated to employ the process steps of the present invention.



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It is also provided that the cleaning Procedures of the present invention are effectively applicable to other types of centrifugal separator, such as the decanter type and the basket type having a filter medium.

***Allowable Subject Matter***

9. Claims 12-15 are allowable over the prior art of record.

***Response to Amendment***

10. Applicant's arguments filed 20 JUL 2005 have been fully considered but they are not deemed to be persuasive with regard to the pending apparatus claims.

Applicant is reminded that "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim, but this is not an ipsissimis verbis test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

Turning to the rejection of the claims under 35 U.S.C. § 102(b), it is noted that the terminology in a pending application's claims is to be given its broadest reasonable interpretation (*In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989))

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and limitations from a pending application's specification will not be read into the claims (*Sjolund v. Musland*, 847 F.2d 1573, 1581-82, 6 USPQ2d 2020, 2027 (Fed. Cir. 1988)).

Anticipation under 35 U.S.C. § 102(b) is established only when a single prior art reference discloses, either expressly or under the principles of inherency, each and every element of a claimed invention. See *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1570, 7 USPQ2d 1057, 1064 (Fed. Cir.), cert. denied, 488 U.S. 892 (1988); *RCA Corp. v. Applied Digital Data Sys., Inc.*, 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984). Moreover, anticipation by a prior art reference does not require either the inventive concept of the claimed subject matter or the recognition of properties that are inherently possessed by the prior art reference. *Verdegaal Brothers Inc. v. Union Oil co. of California*, 814 F.2d 628, 633, 2 USPQ2d 1051, 1054 (Fed. Cir. 1987), cert. denied, 484 U.S. 827 (1987). A prior art reference anticipates the subject matter of a claim when that reference discloses each and every element set forth in the claim (*In re Paulsen*, 30 F.3d 1475, 1478-79, 31 USPQ2d 1671, 1673 (Fed. Cir. 1994) and *In re Spada*, 911 F.2d 705, 708, 15 USPQ2d 1655, 1657 (Fed. Cir. 1990)); however, the law of anticipation does not require that the reference teach what Applicant is claiming, but only that the claims "read on" something disclosed in the reference. *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 772, 218 USPQ 781, 789 (Fed. Cir. 1983), cert. denied, 465 U.S. 1026 (1984) (and overruled in part on another issue), *SRI Intel v. Matsushita Elec. Corp. Of Am.*, 775 F.2d 1107, 1118, 227 USPQ 577, 583 (Fed. Cir. 1985). Also, a reference anticipates a claim if it discloses the claimed invention such that a skilled artisan could take its teachings in combination with

his own knowledge of the particular art and be in possession of the invention. See *In re Graves*, 69 F.3d 1147, 1152, 36 USPQ2d 1697, 1701 (Fed. Cir. 1995), cert. denied, 116 S.Ct. 1362 (1996), quoting from *In re LeGrice*, 301 F.2d 929, 936, 133 USPQ 365, 372 (CCPA 1962).

With respect to the applied prior art under 35 U.S.C. § 102(b), the examiner has explicitly demonstrated how the Yoshida et al. reference expressly or inherently discloses each and every element set forth in the claims and how the pending claims read on the disclosure of the reference, hence the rejection is considered proper.

Yoshida et al. clearly discloses a feeding system for feeding particles into the drum wherein the particles may be of various sizes as noted above. In the response, Applicant has merely introduced method steps from allowed claim 12 into apparatus claim 1 without further defining any structure of the apparatus to define over Yoshida et al. Claim 1 lacks any means or a device to generate an emergency off signal (in response to what condition of the centrifuge?) that accomplishes actuation of the feeding system. Consequently, the mere recitation added to claim 1 regarding "in response to an emergency off signal" hardly recites any structure to define over Yoshida et al. As noted in the rejection and at the very least under the principles of inherency if not expressly disclosed, the apparatus of Yoshida et al. (particularly when automated as taught or suggested at col. 8, lines 5-10) must respond to one or more signals to accomplish the opening and closing of valve 21 and actuation of the pump P.

The recitation in claim 1 of "the particles plugging the outlet nozzles" is but a consequence of the size of the particles and nozzles which is disclosed within the four

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corners of Yoshida et al. but clearly adds no structure to apparatus claim 1. Yoshida et al. teaches nozzles of some size in the drum and particles of various sizes are introduced into the drum which is all that is required to meet this broad claim language.

The "emergency off system" of claim 1 is sparsely recited as having a feeding system which feeding system is taught by Yoshida et al. as discussed above. The use of said feeding system as "an emergency off system" is deemed an intended use of said system. However, such an intended use has not been afforded any patentable weight because it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647; *In re Sebald*, 122 USPQ 527; *In re Lemin et al.*, 140 USPQ 273; *In re Sinex*, 135 USPQ 302; *In re Pearson*, 181 USPQ 641. Nevertheless, the examiner cannot envision any rationale why the disclosed structure in Yoshida et al. could not function as an intended use to introduce particles into the drum of a size to plug the nozzles for emergency off reasons.

The pith of Applicant's arguments regarding amended claim 1 are directed to functional, rather than structural distinctions between the claimed invention and the prior art. Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danley*, 120 USPQ 528, 531 (CCPA 1959).

"Apparatus claims cover what a device is, not what a device does." (emphasis in original) *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990).

In conclusion, the amendments made in the instant application are not deemed of a substantive nature to define over the prior art and thus the rejections are considered proper.

***Conclusion***

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. § 1.136(a).

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 C.F.R. § 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION. ANY RESPONSE FILED AFTER THE MAILING DATE OF THIS FINAL REJECTION WILL BE SUBJECT TO THE PROVISIONS OF MPEP 714.12 AND 714.13.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles E. Cooley whose telephone number is (571)

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272-1139. The examiner can normally be reached on Mon-Fri. All official facsimiles should be transmitted to the centralized fax receiving number 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Charles" followed by a stylized flourish.

Charles E. Cooley  
Primary Examiner  
Art Unit 1723

29 July 2005